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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,094	07/20/2006	Eric Q. Li	42P21656	9494
45209	7590	12/17/2008	EXAMINER	
INTEL/BSTZ			COUGHLAN, PETER D	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP			ART UNIT	
1279 OAKMEAD PARKWAY			PAPER NUMBER	
SUNNYVALE, CA 94085-4040			2129	
			MAIL DATE	DELIVERY MODE
			12/17/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/587,094

**Applicant(s)**

LI ET AL.

**Examiner**

PETER COUGHLAN

**Art Unit**

2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 July 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-24 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 20 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/CIS)  
Paper No(s)/Mail Date 7/20/06 & 'A'  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## Detailed Action

1. Claims 1-24 are pending in this application.

### ***Specification Objection***

2. Paragraph 0008 of the specification recites a machine readable medium may include '... electrical, optical acoustical or other forms of propagated signals (e.g., carrier waves, infrared signals, digital signals etc.).' Carrier waves, inferred signals or digital signals are non-statutory under 35 U.S.C. §101.

### ***35 USC § 101***

3. 35 U.S.C. 101 reads as follows:  
Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-24 are rejected under 35 U.S.C. 101 for nonstatutory subject matter. The computer system must set forth a practical application of that § 101 judicial exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ

at 676-77. The invention is ineligible because it has not been limited to a substantial practical application. A algorithm that determines a value for each feature in a group of features provided by a training data; eliminates at least one feature from the group by utilizing the value for each feature in the group; updates the value for each feature in the group based on a part of the training data that corresponds to the eliminated feature has no practical application. The result has to be a practical application.

In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible and concrete." If the claim is directed to a practical application of the § 101 judicial exception producing a result tied to the physical world that does not preempt the judicial exception, then the claim meets the statutory requirement of 35 U.S.C. § 101.

The phrase application is not clear in its purpose or scope. It is an algorithm with the domain being abstract. There is no cited practical purpose within the claims or specification. There is no purpose or function which uses the

algorithm. The application recites an invention which is abstract in nature.

The invention must be for a practical application and either:

- 1) specify transforming (physical thing) or
- 2) have the FINAL RESULT (not the steps) achieve or produce a useful (specific, substantial, AND credible), concrete (substantially repeatable/ non-unpredictable), AND tangible (real world/ non-abstract) result.

However, the portions of the opinions in State Street and AT&T relying solely on a "useful, concrete and tangible" result analysis *should no longer be relied on*. Ex parte Bilski, Appeal No. 2007-1130 (Fed. Cir. October 30, 2008).

The court has said that there's a two-pronged test to determine whether a software of business method process patent is valid: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. In other words, pure software or business method patents that are neither tied to a specific machine nor change something into a different state are not patentable. Ex parte Bilski, Appeal No. 2007-1130 (Fed. Cir. October 30, 2008).

A claim that is so broad that it reads on both statutory and non-statutory subject matter, must be amended.

A claim that recites an algorithm is not statutory. There must be a result that is a practical application.

***Claim Rejections - 35 USC §112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-24 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, 9 and 17 use the term 'utilizing' is unclear as used in these claims. Claim 1 states by 'utilizing the value for each feature in the group, this is used to eliminating at least one feature from the group. It is unclear how the value is to be 'utilized.'

These claims need to be amended or withdrawn from consideration.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7-21, 23, 24 are rejected under 35

U.S.C. 102(b) (hereinafter referred to as **Cristianini**) being anticipated by Cristianini, 'Support vector machines and other kernel based learning methods.'

Claim 1

Cristianini teaches determining a value for each feature in a group of features provided by a training data (**Cristianini**, p30; 'Training data' of applicant is equivalent to 'training points' of Cristianini. 'Determining the value for each feature' of applicant is accomplished by the 'decision rule' of Cristianini.); eliminating at least one feature from the group by utilizing the value for each feature in the group (**Cristianini**, p29; 'Eliminating at least one feature' of applicant is disclosed by 'detection of irrelevant features and their subsequent elimination' of Cristianini.); updating the value for each feature in the group based on a part of the training data that corresponds to the eliminated feature. (**Cristianini**, p29; 'Updating the value for each function' of

applicant is the result of 'dimensionality reduction' of Cristianini.)

Claim 2

Cristianini teaches a plurality of training samples, each of the training samples corresponding to the group of features. (**Cristianini**, p30; 'Training samples' of applicant is equivalent to 'training points' of Cristianini. It is inherent that training points of Cristianini relates to at least one group.)

Claim 3

Cristianini teaches computing a kernel data based on the training data (**Cristianini**, p30; 'Computing the kernel data' of applicant is equivalent to transforming the data into a feature space' of Cristianini.); computing the value for each feature of the group based on the kernel data (**Cristianini**, p30; 'Computing the value' of applicant is accomplished by the 'kernel function' of Cristianini. Cristianini discloses that the kernel function uses training points and the test points.); and storing the kernel data in a buffer. (**Cristianini**, p125; 'Buffer' of applicant is equivalent to 'memory space' of Cristianini.)

Claim 4



Cristianini teaches computing a matrix as the kernel data, each component of the matrix comprising a dot product of two of training samples provided by the training data. (**Cristianini**, p168; 'Dot product' of applicant is equivalent to 'dot product' of Cristianini.)

Claim 5

Cristianini teaches retrieving a kernel data from a buffer (**Cristianini**, p125; 'Buffer' of applicant is equivalent to 'memory space' of Cristianini.); updating the kernel data based on the part of the training data that corresponds to the eliminated features (**Cristianini**, p29; 'Updating the kernel data' of applicant is the result of 'dimensionality reduction' of Cristianini.); and updating the value for each feature of the group based on the updated kernel data. (**Cristianini**, p29; 'Updating the value for each function' of applicant is the result of 'dimensionality reduction' of Cristianini.)

Claim 7

Cristianini teaches computing a ranking criterion for each feature of the group based on the value for the each feature (**Cristianini**, p18; 'Ranking criterion' of applicant is achieved by using the perceptron algorithm which can be used to rank the

data according to their information content of Cristianini.); eliminating the at least one feature with the minimum ranking criterion from the group (**Cristianini**, p29; 'Eliminating at least one feature' of applicant is disclosed by 'detection of irrelevant features and their subsequent elimination' of Cristianini.); and recording the eliminated feature in a feature ranking list. (**Cristianini**, 'Recording the eliminated feature in a feature ranking list' of applicant is inherent in Cristianini, due to if Cristianini can determine which of the features is irrelevant, then it must be 'recorded' in some memory for comparison purposes.)

Claim 8

Cristianini teaches repeating of eliminating the at least one feature from the group and updating the value for each feature of the group until a number of features in the group reaches a predetermined value. (**Cristianini**, p45; 'Repeating' of applicant is disclosed as 'recursion' of Cristianini. 'Until a number of features in the group reaches a predetermined value' of applicant is disclosed by using recursion 'until the full length of n characters has been attained' of Cristianini.)

Claim 9

Cristianini teaches a training logic to determine a value for each feature in a group of features provided by a training data (Cristianini, p30; 'Training data' of applicant is equivalent to 'training points' of Cristianini. 'Determine a value for each feature' of applicant is accomplished by the 'decision rule' of Cristianini.); and an eliminate logic to eliminate at least one feature from the group by utilizing the Value for each feature in the group (Cristianini, p29; 'Eliminating at least one feature' of applicant is disclosed by 'detection of irrelevant features and their subsequent elimination' of Cristianini.); wherein the training logic further updates the value for each feature in the group based on a part of the training data that corresponds to the eliminated feature. (Cristianini, p29; 'Updating the value for each feature' of applicant is the result of 'dimensionality reduction' of Cristianini.)

Claim 10

Cristianini teaches wherein the training data comprises a plurality of training samples, each of the training samples having the group of features. (Cristianini, p30; 'Training samples' of applicant is equivalent to 'training points' of

Cristianini. It is inherent that training points of Cristianini relates to at least one group.)

Claim 11

Cristianini teaches a decision logic to decide whether to repeat the elimination of the at least one features from the group and update of the value for each feature of the group until a number of features in the group reaches a predetermined value. (**Cristianini**, p45; 'Repeating' of applicant is disclosed as 'recursion' of Cristianini. 'Until a number of features in the group reaches a predetermined value' of applicant is disclosed by using recursion 'until the full length of n characters has been attained' of Cristianini.)

Claim 12

Cristianini teaches wherein the training logic further comprises: a kernel data logic to compute a kernel data based upon the training data (**Cristianini**, p30; 'Computing the kernel data' of applicant is equivalent to transforming the data into a feature space' of Cristianini.); a buffer to store a kernel data (**Cristianini**, p125; 'Buffer' of applicant is equivalent to 'memory space' of Cristianini.); a value logic to compute the value based on the kernel data. (**Cristianini**, p30; 'Computing

the value' of applicant is accomplished by the 'kernel function' of Cristianini. Cristianini discloses that the kernel function uses training points and the test points.)

Claim 13

Cristianini teaches wherein the kernel data logic further updates the kernel data in the buffer based on the part of the training data that corresponds to the eliminated features (Cristianini, p29; 'Updating the kernel data' of applicant is the result of 'dimensionality reduction' of Cristianini.), and the value logic further updates the value based upon the updated kernel data. (Cristianini, p29; 'Updating the value' of applicant is the result of 'dimensionality reduction' of Cristianini.)

Claim 14

Cristianini teaches wherein the kernel data logic further subtracts a matrix from the kernel data, each component of the matrix comprising a dot product of two of training samples provided by the part of the training data. (Cristianini, p168; 'Dot product' of applicant is equivalent to 'dot product' of Cristianini.)

Claim 15

Cristianini teaches wherein the eliminate logic further comprises a ranking criterion logic to compute a ranking criterion for each feature of the group based on the value for the each feature. (**Cristianini**, p18; 'Ranking criterion' of applicant is achieved by using the perceptron algorithm which can be used to rank the data according to their information content of Cristianini.)

Claim 16

Cristianini teaches wherein the eliminate logic further comprises a feature eliminate logic to eliminate the at least one feature having the minimum ranking criterion from the group. (**Cristianini**, p29; 'Feature eliminate logic' of applicant is disclosed by 'detection of irrelevant features and their subsequent elimination' of Cristianini.);

Claim 17

Cristianini teaches determining a value for each feature in a group of features provided by a training data (**Cristianini**, p30; 'Training data' of applicant is equivalent to 'training points' of Cristianini. 'Determine a value for each feature' of applicant is accomplished by the 'decision rule' of

Cristianini.); eliminating at least one feature from the group by utilizing the value for each feature in the group (Cristianini, p29; 'Eliminating at least one feature' of applicant is disclosed by 'detection of irrelevant features and their subsequent elimination' of Cristianini.); and updating the value for each feature in the group based on a part of the training data that corresponds to the eliminated feature. (Cristianini, p29; 'Updating the value for each feature' of applicant is the result of 'dimensionality reduction' of Cristianini.)

Claim 18

Cristianini teaches wherein the training data further comprises a plurality of training samples, each of the training samples corresponding to the group of features. (Cristianini, p30; 'Training samples' of applicant is equivalent to 'training points' of Cristianini. It is inherent that training points of Cristianini relates to at least one group.)

Claim 19

Cristianini teaches computing a kernel data based on the training data (Cristianini, p30; 'Computing the kernel data' of applicant is equivalent to transforming the data into a feature

space' of Cristianini.); computing the value for each feature of the group based on the kernel data (**Cristianini**, p30; 'Computing the value' of applicant is accomplished by the 'kernel function' of Cristianini. Cristianini discloses that the kernel function uses training points and the test points.); and storing the kernel data in a buffer. (**Cristianini**, p125; 'Buffer' of applicant is equivalent to 'memory space' of Cristianini.)

Claim 20

Cristianini teaches wherein the plurality of instructions that result in the computing system computing the kernel data, further result in the computing system computing a matrix as the kernel data, each component of the matrix comprising a dot product of two of training samples provided by the training data. (**Cristianini**, p168; 'Dot product' of applicant is equivalent to 'dot product' of Cristianini.)

Claim 21

Cristianini teaches retrieving a kernel data from a buffer (**Cristianini**, p125; 'Buffer' of applicant is equivalent to 'memory space' of Cristianini.); updating the kernel data based on the part of the training data that corresponds to the eliminated feature (**Cristianini**, p29; 'Updating the kernel data'



of applicant is the result of 'dimensionality reduction' of Cristianini.); and updating the value for each feature of the group based on the updated kernel data. (**Cristianini**, p29; 'Updating the value for each feature' of applicant is the result of 'dimensionality reduction' of Cristianini.)

Claim 23

Cristianini teaches computing a ranking criterion for each feature of the group based on the value for the each feature (**Cristianini**, p18; 'Ranking criterion' of applicant is achieved by using the perceptron algorithm which can be used to rank the data according to their information content of Cristianini.); eliminating the at least feature with the minimum ranking criterion from the group (**Cristianini**, p29; 'Eliminating at least one feature' of applicant is disclosed by 'detection of irrelevant features and their subsequent elimination' of Cristianini.); and recording the eliminated feature in a feature ranking list. (**Cristianini**, 'Recording the eliminated feature in a feature ranking list' of applicant is inherent in Cristianini, due to if Cristianini can determine which of the features is irrelevant, then it must be 'recorded' in some memory for comparison purposes.)

Claim 24

Cristianini teaches repeating of eliminating the at least feature from the group and updating the value for each feature of the group until a number of features in the group reaches a predetermined value. (**Cristianini**, p45; 'Repeating' of applicant is disclosed as 'recursion' of Cristianini. 'Until a number of features in the group reaches a predetermined value' of applicant is disclosed by using recursion 'until the full length of n characters has been attained' of Cristianini.)

**Conclusion**

4. The prior art of record and not relied upon is considered pertinent to the applicant's disclosure.

- 'Kernel methods for pattern analysis': Shawe-Taylor

- U. S. Patent Publication 20050131847: Waston

- U. S. Patent Publication 20050170372: Afeyan

- U. S. Patent Publication 20050165556: Barnhill

- U. S. Patent Publication 20050071300: Bartlett

5. Claims 1-24 are rejected.

***Correspondence Information***

6. Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner Peter Coughlan, whose telephone number is (571) 272-5990. The Examiner can be reached on Monday through Friday from 7:15 a.m. to 3:45 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor David Vincent can be reached at (571) 272-3080. Any response to this office action should be mailed to:

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/P. C./

Examiner, Art Unit 2129

Peter Coughlan

12/2/2003

/David R Vincent/

Supervisory Patent Examiner, Art Unit 2129